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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Jie Liang
Serial No:	09/517,234
Filed:	3/2/2000
Art Unit:	2624
Examiner:	A. Do
Docket No.:	TI-29011
Conf. No.:	4622
Customer No.:	23494

CERTIFICATION OF FACSIMILE TRANSMISSION

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Gracia Sansom 9-11-03
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FACSIMILE COVER SHEET

X FACSIMILE COVER SHEET (1 SHEET)	___ AMENDMENT ___
___ NEW APPLICATION	___ EOT ___
___ DECLARATION	___ NOTICE OF APPEAL
___ ASSIGNMENT	X APPEAL BRIEF (5 Pages)
___ FORMAL DRAWINGS	___ ISSUE FEE
___ INFORMAL DRAWINGS	___ REPLY BRIEF (IN TRIPLICATE)
___ CONTINUATION APP'N	___
___ DIVISIONAL APP'N	

NAME OF INVENTOR(S): Jie Liang	RECEIPT DATE & SERIAL NO.: **Serial No.: 09/517,234** **Filing Date: 3/2/2000**
TITLE OF INVENTION: Image Coding Using Embedded Zerotree Patterns and Bitplanes	
TI FILE NO.: **TI-29011** / DEPOSIT ACCT. NO.: **20-0668**	
FAXED: **09/11/2003** DUE: **09/11/2003** ATTY/SEC'Y: **CHH/gs**	

Texas Instruments Incorporated
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#6 9-25-03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.: 09/517,234 Confirmation No.: 4622
Appellant: Liang
Filed: March 2, 2000
TC/A.U. 2624
Examiner: Do

Docket No.: TI-29011
Cust.No.:

APPELLANT'S BRIEF (in triplicate)

Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450

Sir:

The attached sheets contain the Rule 192(c) items of appellant's brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668; two additional copies of this first sheet of appellant's brief are enclosed.

Respectfully submitted,

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Rule 192(c)(1) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 192(c)(2) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 192(c)(3) Status of claims

Claims 1-5 are pending in the application with all claims finally rejected. This appeal involves the finally rejected claims.

Rule 192(c)(4) Status of amendments

There is no amendment after final rejection.

Rule 192(c)(5) Summary of the invention

The invention provides a method of image compression using wavelet transforms and hierarchical trees of the resulting wavelet coefficients in which relations among the various nodes of the trees can be used to minimize the size of the resulting code. In particular, the four children nodes of a parent node form a cluster, and encoding on a cluster basis permits inferences (and thus skipped codes) such as when a cluster is significant but the first three children nodes are insignificant, then the fourth child node must be significant. Application pages 5-6 describes the method.

Rule 192(c)(6) Issues

The issue presented on appeal is:

whether claims 1-5 are anticipated by the Dube reference.

Rule 192(c)(7) Grouping of the claims

The claims are treated as a single group.

Rule 192(c)(8) Argument

Claims 1-5 were rejected as anticipated by Dube. With regard to claim 1, step (b)(i), the Examiner cited Dube column 10, lines 25-29.

Appellant replies that cited Dube column 10, lines 25-29 provides encoding with symbol G if at least one child node is significant but all granchildren nodes are insignificant. In contrast, claim 1, step (b)(i) requires skipping the coding of the children nodes of a cluster if the parent node so indicates. Thus the cited portion of the Dube reference does not anticipate step (b)(i) of claim 1.

With regard to claim 1, step (b)(iv), the Examiner again cited Dube column 10, lines 25-29.

Appellant again replies that Dube column 10, lines 25-29 provides encoding with symbol G if at least one child node is significant but all granchildren nodes are insignificant. In contrast, step (b)(iv) of claim 1 requires skipping the encoding of a child node if determinable from the encodings of the other children nodes.

Indeed, Dube does not suggest these limitations of sole independent claim 1; and consequently all of the claims are patentable over Dube.

Rule 192(c)(9) Appendix

1. A method of image coding, comprising:

(a) wavelet transform a portion of a digital image into hierarchical trees of coefficients;

(b) for a first tree of said hierarchical trees and for a first cluster of children nodes derived from a first parent node of said first tree, after encoding said first parent node encode a value and tree indication for each of the children nodes in said first cluster wherein

(i) said value and tree indication are skipped when said encoding of said first parent node so indicates,

(ii) said tree indication for a first of said children nodes indicates significance of descendant nodes of said first of said children nodes,

(iii) said value for a first of said children nodes indicates significance of said first of said children nodes,

(iv) said value and tree indication for one of said children nodes is skipped when determinable from encoding of the other of said children nodes of said first cluster, and

(v) said tree indication is omitted if said children nodes in said first cluster have no descendant nodes; and

(c) repeat foregoing step (b) for a second, third, ..., and Nth cluster of children nodes derived from a second, third, ..., and Nth parent node of said first tree; and

(d) repeat foregoing steps (b)-(c) for a second, third, ..., and Mth tree of said hierarchical trees.

2. The method of claim 1, wherein:

(a) the steps (b)-(c) of claim 1 are repeated for each bitplane of said coefficients.

3. The method of claim 1, wherein:

(a) the steps (b)-(c) of claim 1 include arithmetic coding of said values and tree indications using a context which for a children node includes other children nodes of a common cluster.

4. The method of claim 2, wherein:

(a) said value is a member of the group consisting of a significance bit plus a sign bit, an insignificance bit, a refinement bit, and a skip.

5. The method of claim 2, wherein:

(a) said tree indication is a member of the group consisting of a zerotree root, a significant descendant node, and a skip.